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the same sort occur. Except for a few such, however, the botanist who knows the plants of an extended region will approve of all such unions as appear in a necessarily hasty review of the book.

In some few instances, though the editors have evidently done their work anew for this edition, and have not contented themselves with compiling from earlier editions or other sources, defective descriptions or the omission of really crucial characters are noticeable. Thus, the imbricate petals of Anonaceæ are still called valvate; Potentilla rivalis, var. pentandra is redescribed as having five stamens, whereas the number is usually six or eight, five being very exceptional in the specimens of the Engelmann herbarium and in many that have been examined in the field by Mr. Hitchcock; the petaloid filaments of Thalictrum clavatum are called club shaped, etc. Very useful distinctions between Oxalis corniculata and its variety stricta are afforded by the rhizomes and dichotomous inflorescence of the latter, from which O. recurva, which resembles it in some respects, differs in the trimorphic heterogony of its flowers. It might also have been well to note that the blue flowered flaxes, introduced in the East, belong to two well-marked forms, one of them, which has been separated under the name of L. humile, having widely-dehiscent capsules with ciliate septa, the other, with nearly closed capsules the septa of which are not ciliate. The reviewer must also plead guilty to having omitted the very important characters derivable in Epilobium from the innovations, which consist of sessile buds in no. 1, of dense rosettes at base of the stem in nos. 4 and 5, of running leafy shoots in nos. 7 and 8, of scaly rhizomes in no. 9, and of filiform bulbiferous shoots in nos. 2, 3 and 10. But whatever little defects may be noticed in one way or another, both amateurs and working botanists, who are concerned with the flora of the northern states anywhere east of the Rocky Mountains, will be grateful for so good a book, and feel disposed to congratulate the editors on the very satisfactory way in which they have brought it out.—WILLIAM TRELEASE.

OPEN LETTERS.

Deep-water Nostoc.

In the sentence "When Dr. Wolle's 'Fresh Water Algæ' appeared, this Nostoc was not mentioned," in my note in the GAZETTE, November, 1889, p. 291, I referred to the deep-water Nostoc of Lake Michigan. If I had said "Our deep-water Nostoc was not mentioned,' I should have expressed my thought more perfectly. C. B. ATWELL.

Evanston, Ill.

Some more queer botany.

In a letter in this department last year a writer called attention to "some queer botany" which he found in a "doctor-book." If only it could be confined to this class of publications less harm would result than now

when so much that is queer finds its way into the text-books. One of the editors gave, in the January number, page 23, a notice of the revision of Wood's Lessons in Botany, and it is perfectly evident that that editor had not given more than a cursory glance at the book before writing the notice. If he had he could not have failed to notice some things that I think will make "mighty interestin' readin'" for the subscribers to the GAZETTE. The fact that such statements stand in a book that is to be the introduction of many young students to the science of botany will, however, rather sadden teachers to whom may fall the task of eradicating the false notions. If you can find space, Messrs. Editors, pray reprint a few of the more striking blunders that have been put into such a handsome dress in this new text-book.

§ 129. "The stigma is the *glandular orifice of the ovary*,[1] communicating with it either directly or through the tubiform style."

§ 194. "Air, or rather its oxygen, is required for the *conversion of starch into sugar—a process always depending upon oxidation.* The oxygen absorbed *unites with a portion of the carbon o the starch*, producing heat,, evolving carbon dioxide, and *thus converting the remainder into grape sugar* soluble and nutritive."—Queer chemistry, too.

§ 196. "The cause of the downward tendency of the root is a theme of much discussion. Some have referred it to the principle of gravitation; others to its supposed aversion to light. But it is a *simple* and *satisfactory* explanation [*sic*] that its growth or cell development takes place most readily on the moist side of its growing points, and consequently in a downward direction [and then the writer naively adds a qualification which upsets the 'simple and satisfactory explanation' completely] so long as the soil in contact with its lower surface is more moist than that above."

§ 198. "The *leading propensity* of the root is to *divide itself.*"

§ 199. ". . . the fine rootlets, or fibers, are covered by *dry* protective cells, forming a root-cap. . . . 'They (the root-hairs) *are developed and perish annually* with the leaves. . ."

§ 416. "The bark. . Next to the bast is the green cellular layer, *called phellogen.*"

§ 427. "Respiration. . . So with plants; they *suck or draw in* air through openings in the epidermis already described (stomata), and when it is discharged it is found to be changed in character, having been robbed of its oxygen *OR its carbon dioxide.* The oxygen of the air while among the tissues *unites with substances found there*, and *new material for plant growth is thus formed*; in the *night* carbon dioxide is breathed out."

§ 432. "How the elaborated sap passes back and even downward through cells and vessels that are at the same time employed in conveying the crude watery fluids up from the root is not understood. We are not acquainted with any physicial or chemical force which causes the crude sap to creep through the cells and ducts of the trunks and branches of the great trees, hundreds of feet in height; nor is the transfusion of the prepared fluids and cell materials to every part of the plant's structure where food is required less difficult to explain. In fact observation and experiment have thus far failed to account for these mysterious movements."

§ 456. "Variety *or* race *is a sub-species.*"

§ 497. "Species *or* races."

Can anything "queerer" than some of that be found in "doctor-books"? I trow not. R.

1 Italics mine.